

# agricultural situation

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how SRS  
gets  
it  
together.

A Profile of the Multiple Frame Sampling Technique

# how SRS gets it together:

## A Profile of the Multiple Frame Sampling Technique

One of the newer additions to SRS' battery of estimating techniques is multiple frame sampling—which is a highfalutin way of saying that SRS combines two different survey tactics to gather data for some estimates.

The big advantage of the combined approach is better accuracy at a lower cost than if just one tactic were used alone.

Charles Caudill, statistician in charge of the Texas Crop and Livestock Reporting Service, recently helped us write up a sort of layman's guide to multiple frame sampling.

Caudill is very much wrapped up in this survey technique—having had a hand in developing the methodology for SRS' national program involving livestock and now head of the SRS Texas office—which with State funds has developed an extensive county data program based on multiple frame sampling. Texas has used the technique for all of its major crop and livestock surveys since 1968.

*A bit of background.* Only with the agricultural census, taken once every 5 years, have attempts been made to reach all agricultural producers in the United States. All other surveys include only a small portion—or sample—of the total.

As a stand-in for all producers, the sample farmers must represent a reliable cross-section of farms if the survey results are to be accurate.

Throughout the 1950's and the early 1960's a major goal of SRS was to develop ways of getting reliable samples—and to do this they moved in the direction of probability sampling.

In a survey of this nature, every farmer or farm operation must have a chance of being selected in the sample. Also, the probability that a particular operation is included in the survey must be known. Usually large farms are given proportionately greater chances of being included than small ones.

All SRS surveys depend heavily on the cooperation of those contacted—but this is especially true of multiple frame surveys. The better the participation, the more accurate the estimates will be. In fact, every single return carries a lot of weight in a probability sample since there's no good way to replace a farmer who refuses to respond.

It's possible with probability sampling techniques for SRS to design its survey group so as to get a reliable cross-section of producers. And because of this, it's also possible for SRS to pinpoint the sampling error—which very roughly can be thought of as a measure of how close results from the sample farmers are expected to be to totals if all producers were included.

By 1965 SRS had refined its probability sampling technique to where national livestock estimates (excluding Alaska and Hawaii) had rela-

tive sampling errors of only about 2 to 4 percent. Now that error has been cut to about 1 to 2 percent.

*Where multiple frame sampling fits in.* If you'll consider for a minute how you might handle the following family problem, you'll probably also get a pretty good idea of why SRS uses multiple frame sampling.

Suppose you or your wife is arranging a big family get-together and you've got to get in touch with all of your relatives who are spread out through the country.

You'd start by mailing out the invitations. After all, an 8-cent stamp is cheaper than a long distance phone call. However, you might call those who didn't respond or those you wanted to ask some specific questions.

The same rationale applies to SRS' multiple frame surveys.

The first step is always sending out mail questionnaires. Every SRS office devotes a good deal of time to setting up and maintaining an extensive list of the names and addresses of producers who can be contacted by mail. For efficient sampling this list is also stratified by size of farming operation—and it's referred to by the statisticians as their "list frame."

However, because of the changes that are constantly occurring in agriculture, it's never possible or practical for SRS to get a list of operators which is 100 percent complete. Yet the statisticians have to consider every producer in order to satisfy the requirement of probability sampling that *every* farmer have a chance of being included in the survey.

It's at this point that SRS resorts to its "area frame"—county maps combined with aerial photos that graphically show all types of land use. These maps conceptually provide 100-percent coverage of the Nation's farming activity.

Using the maps and photos, SRS makes a random selection of small



areas of land which it terms segments, and then interviews everyone who operates land in the chosen segments. There must be 100-percent response so SRS interviewers visit everyone in the sample.

One pitfall of multiple frame sampling is that some of the farmers and ranchers reached by the mail questionnaire will also be interviewed in the course of area sample surveys.

The individuals who do show up in both survey frames are known as overlap operators and SRS has to identify them so that the items on their farms aren't counted twice.

*The national program.* In 1965 multiple frame surveys were conducted by SRS in Wyoming and Mississippi. These early efforts helped work out some of the kinks in the methodology. Roughly 2 years later SRS began multiple frame sampling for its quarterly farm labor surveys. Then Illinois and Missouri started operational research work in multiple frame livestock surveys in 1968, followed by Iowa, Nebraska, and Kansas in 1969.

It wasn't until 1970 that SRS was funded by Congress to begin a program of multiple frame surveys for cattle and hogs in five States. Additional funds were approved in 1971 that expanded the Federal program of multiple frame cattle surveys to 16 States and hog surveys to 10 States.

The program will include 29



States in 1973—14 States will conduct quarterly multiple frame hog surveys and 28 States will make semiannual cattle surveys using multiple frame sampling.

*Multiple frame sampling in the Lone Star State.* While the Federal program has placed emphasis on livestock multiple frame surveys, Texas uses the multiple frame methodology for all its major crop and livestock surveys—and has ever since 1968.

The impetus for modernizing Texas' surveys came in 1967 when the State Legislature first provided funds through the Texas Department of Agriculture for implementing a program of county estimates.

In 1973 the Texas SRS Office will conduct 10 multiple frame surveys—seven livestock and three crop. Planning for these surveys is continuous and has to start at least 1 year in advance of the actual survey.

These multiple frame surveys are designed to provide annual State and county estimates for some 65

crop and livestock items for each of the 254 counties in Texas.

*A long, long list.* Since Texas' surveys are used to collect both crop and livestock information, the Lone Star State's list frame must include as nearly as possible all farms and ranches in the State.

The Texas list frame currently contains more than 204,000 names and addresses of farmers and ranchers. Caudill's office tries to include all farms with more than 50 acres of land on this list. At present less than 4 percent of the major crops in Texas and less than 10 percent of the State's livestock are produced by farmers and ranchers who aren't listed.

Still for important crops like cotton or grain sorghum, missing 4 percent of the producers allows for too much error. That's why the Texas SRS office turns to area frame samples—to rectify the incompleteness of the list.

In any given survey year, Texas' multiple frame samples will involve more than 125,000 separate con-

tacts with farmers and ranchers, which means well over 50 percent of the names on the list will be contacted one or more times during the year.

By comparison, States operating under the Federal program for gathering livestock data will typically contact fewer farm operators.

A State conducting six surveys annually (four quarterly hog and two semiannual cattle surveys) will as a rule make about 12,000 contacts with farmers in gathering basic data. The Federal funded program provides for State estimates only. Much larger samples are needed to use this survey technique for county estimates.

What all this means is that the Texas program of multiple frame sampling is much more extensive than the multiple frame program currently in operation in other States. Caudill stresses that this is possible only because of State funds available through the Texas Department of Agriculture and because of the support of Texas farmers and ranchers.

*What it all adds up to.* The ultimate goal of Texas' multiple frame sampling effort is to provide precise and unbiased estimates for each county and district in the State, as well as the State as a whole.

And while it has taken extra money over and above that provided for the Federal program of State and national estimates to pay for the Texas county data program, multiple frame sampling has held the added costs in Texas to less than 10 percent of what it would have taken to get this data with only an area sample.

*The need for numbers.* Billions of dollars of agricultural decisions depend each year on SRS' estimates. With so much riding on them, it's no wonder that there's a constant push for greater accuracy in data collection and forecasting techniques.

## BYE BEE BOTTLENECK

The staff of Ohio's State Department of Agriculture faced a paper-work bottleneck every year when the State's 9,000 apiarists mailed in their \$1 for a beekeeping license. Like most States, Ohio requires a license to keep bees so State inspectors can find hives to inspect them for disease.

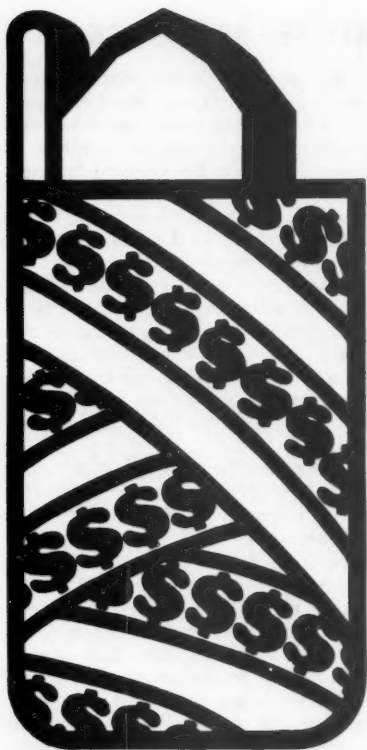
Formerly, processing and issuing 9,000 licenses by hand was a time consuming and expensive task for the State—but not in fiscal 1972. A computer took over the busy work that year, saving time and money, and the apiarists got their licenses quicker.

The new efficiency has its roots in a Federal-State Cooperative Agreement between SRS and the Ohio Department of Agriculture. SRS computer experts suggested that the State Department of Agriculture might rent time on the Department of Finance's computer to speed some work-a-day tasks for agriculture—in particular, bee licensing.

SRS also helped design beekeeping applications and certificates that could be processed automatically and trained Ohio Agriculture staffers to run the program.

Gene R. Abercrombie, Director of the Ohio Department of Agriculture, was quick to praise the new system. "It has really speeded up the handling of applications and certificates this first year, and it should improve in coming years. Frankly, it has just saved us a lot of work."

The computerized system has other advantages, too. "State pesticide officials may now get computer printouts with names, addresses, and telephone numbers of beekeepers by county," says Dan Tucker, SRS' statistician in charge for Ohio. "These lists can be provided to commercial sprayers, who can then telephone local beekeepers in intended spray areas. This helps cut down on bee population losses."



## EYEING EXPENDITURES

In today's agriculture, almost every year brings some new technological development which could make a difference in the way farmers spend their money.

That's the reason SRS plans to launch an annual survey on the purchasing patterns of producers—asking them about their spending for such broad categories of farm goods as feed, seed, livestock, and fertilizer as well as production items that are common to both farm and nonfarm people: interest, taxes, cash wages, fuel, repairs, and so forth.

### *The Only Certainty . . . Change*

The need for an annual survey is obvious if you trace back over what's happened to spending patterns

since 1950. While farm inputs remained about the same overall during the past two decades, the input mix has changed drastically.

Purchased inputs gained nearly 50 percent over 1950 totals. In the mechanical category it wasn't just an increase in numbers; machines that could do more work were constantly introduced. For example, tractor numbers increased over one-third while their horsepower more than doubled over the two decades.

Other purchased inputs that have gone up since 1950 include fertilizer and pesticides, each up nearly four times, and mixed feeds, whose use more than doubled.

Meantime the labor input declined drastically. It took 15.1 billion hours to produce 1950's agricultural output. By the early 1970's man-hours had plunged 57 percent to 6.5 billion.

### *What the New Survey Will Do*

The first of SRS' annual surveys on farmers' purchasing patterns and production expenditures will be launched in February. In all, some 2,000 farmers from all parts of the Nation will be contacted.

The operators interviewed in the course of these expenditure surveys will be chosen in one of two ways: their names will either be drawn from lists of commercial farmers living in selected counties or they'll be contacted if they live in any of a dozen or so randomly selected small geographic areas of the same counties.

This approach—called multiple frame sampling—assures SRS of getting a representative sample of the U.S. farm operator population.

Each operator contacted will be requested to provide some general information on his spending for major groups of items like machinery, building materials, petroleum products, fertilizer, interest, taxes, wages, and so forth. He'll also be asked for detailed information on purchases for several of the

expenditure groups.

The plans for this new series of SRS expenditure surveys call for them to be conducted in 5-year cycles. Data on production expenses will be collected during four consecutive years; the fifth year SRS will focus on farm family living expenses.

Information from the annual surveys will be used by the many USDA agencies which measure and study farmers' net income. And at the end of every 5-year cycle, SRS will use the data to revise the weights, or relative importance, given to various goods and services included in SRS' prices paid index.

#### *Price Index Uses*

The economic well-being of every U.S. farmer depends on two kinds of prices—those he receives for products sold and those he pays for items purchased.

It's impossible to draw conclusions about his farm income unless you know what's happened to both kinds of prices, and also what's happened to the pattern of his purchases.

Small price hikes for something that involves a frequent cash

outlay—such as wages or feed or telephone and electric bills—may in the longrun add up to more than a big increase for something that a farmer buys only every couple of years.

Each year SRS tracks the prices of various goods and services used by farmers through 12 different types of surveys that involve approximately 40,000 farmers and 70,000 retailers who deal with farm operators.

This price data, coupled with the information about purchasing patterns, is used by SRS statisticians to maintain the index of the prices paid by farmers which is published each month.

The relationship between the prices paid index and the SRS index of prices received by farmers is commonly used as an indication of farmers' purchasing power and relative well-being in the Nation's economy.

The indexes and prices are used extensively by agricultural analysts, farm organizations, legislators, and USDA officials in shaping the guidelines for farm policies.

**SOYBEANS: SLIMMER ROWS FOR FATTER YIELDS**—The average row spacing for soybeans has been narrowing in recent years as farmers try to boost yields by crowding more plants onto an acre. As determined in 6 years of SRS objective yield measurements in six States, the average space between rows narrowed by 1 to 3 inches between 1966 and 1972. The tight row spacing in Ohio, compared with other North Central States, results from more acreage drill-planted, either solidly or with alternate holes plugged.

State	Average row width		Average yield per acre	
	1966	1972	1966	1972
	Inches		Bushels	
Ohio	31.2	29.2	28.5	30.0
Indiana	36.8	35.4	26.0	32.0
Illinois	37.0	33.8	27.0	36.0
Minnesota	36.5	35.2	24.0	29.0
Iowa	38.0	35.9	29.5	37.0
Missouri	37.0	34.8	25.0	31.0
Six-State average	36.6	34.3	26.8	32.5

## FROM RANCH TO ROAST: THE HOW AND WHY OF BEEF MARGINS

The price of beef has become—and is likely to remain—a much-discussed issue among farmers as well as the general public.

Beef margins, or the farm-to-retail price spreads, are central to the question of beef prices. Here's how they work:

Between the live steer and the retail meat counter, beef is moved long distances, processed, and packaged in a variety of retail cuts and a range of package sizes that consumers choose from at the supermarket.

These marketing services entail marketing costs—and that's where price spreads come in.

Trends in overall marketing costs are depicted in price spreads between the fed steer at the feedlot and the supermarket meat counter. USDA publishes price spreads for beef, pork and other important farm foods each month.

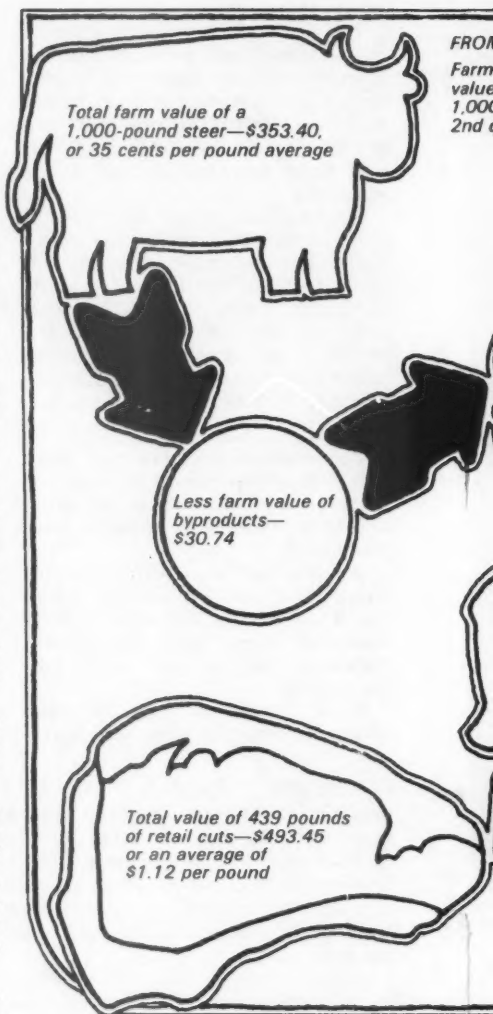
For beef, two gross margins are calculated—farm-to-carass, and carcass-to-retail. Together, they add up to the farm-to-retail margin.

The farm-to-carass margin is the difference between the farmer's return for the carcass beef portion of his steer (referred to in USDA data as the net farm value) and the packer's gross return for that carcass. It excludes hides and other byproduct items.

Likewise, the spread in value between the packer's price for the carcass and final returns from consumer purchases is the carcass-to-retail margin.

Put together, they make up the farm-to-retail margin: the beef value sold by retailers less the net farm value.

To make a ready comparison between live weight and retail prices per pound, the diagram here illus-

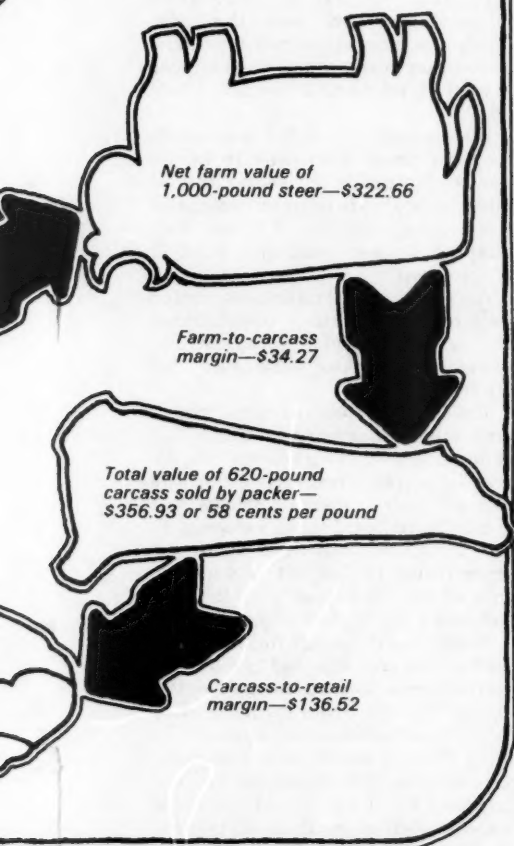


trates the value per head during the second quarter of 1972 for a 1,000-pound Choice steer for the live animal, the beef carcass, and the corresponding retail cuts.

During second quarter 1972, the farmer sold his 1,000-pound Choice steer to a packer for an average of \$353.40, or about 35 cents per pound, taking into account about \$5.80 for

#### FROM RANCH TO ROAST

Farm-to-table weight and value changes for a 1,000-pound Choice steer, 2nd quarter, 1972



transportation and marketing charges.

Of this total, \$30.74 was the farm value of byproducts not sold as retail cuts—hide, tongue, tripe, liver, etc.

To arrive at the farm value of the beef portion of the steer, the byproduct value is subtracted from the live weight selling price: \$353.40 - \$30.74 = \$322.66.

After removal of byproducts and waste, the steer carcass weighs 620 pounds. At a carcass price of 58 cents per pound, the packer's return for the dressed carcass would be \$356.93. Thus, the farm-to-carccass margin was \$34.27 (\$356.93 less \$322.66).

The retailer trimmed the 620 pound carcass into 462 pounds of cuts, but because of a 5-percent shrink, he sold only 439 pounds. (Retail shrink includes losses in value from spoilage and pilferage.)

The retail gross value for 439 pounds of meat—sold at an average of \$1.12 per pound—was \$493.45. The margin from carcass to retail was \$136.52.

Since 1967 the greatest increase has been in the carcass-to-retail margin. Into this goes the cost of breaking the carcass, transporting, local delivery, and retail cutting and packaging, as well as retail costs.

The retailers' share averages about one-third less than the carcass-to-retail margin.

The widening spread may be explained in part by factors that have tended to push up costs along the marketing chain: longer distance shipments to consumer centers, higher labor costs, interest and overhead, for example.

Rising incomes coupled with mounting consumer demand have also played a role in the overall meat price rise.

Per capita consumption of beef has more than doubled in the past 20 years—from 56 to 113 pounds. While the supply of beef has more than kept pace—going from 8.8 million to 21.9 million pounds in the last two decades—increases in population are swallowing up production gains as fast as they occur.

Even so, beef is not likely to become a scarce commodity soon. Predictions from USDA's Economic Research Service are that cattlemen will rise to the challenge of upping beef output by a third by 1980.



## A BUCKWHEAT BOOM: FOR WHOM?

Partly because of a natural food kick, partly because of new products, buckwheat is on the comeback trail with U.S. consumers.

But it may be that U.S. farmers—who harvested only 39,000 acres of buckwheat and produced only 678,000 bushels at last count in 1969—won't care to resurrect the crop but will let imports fill the growing demand.

Buckwheat's big food use for a long time was in pancake flour—but changing tastes and breakfast patterns drastically cut into consumer demand. By the time of the last USDA household food consumption survey in 1965, buckwheat use was down to about a tenth of a pound per person—for a U.S. food use total of 260,000 bushels a year.

That figure is much out of date, though, judging from recent imports from Canada. Last year we purchased 156,000-plus bushels of buckwheat from our northern neighbor (contrasted with 5,000 back in 1965). Added to our domestic production for food use, we're eating substantially more buckwheat now than before.

Buckwheat's enhanced appeal rests largely on its nutritional excellence—which is equal or superior to many of the better known cereals and seeds.

Not only pancake flour, but buck-

wheat groats and straight buckwheat flour are gaining new prominence in retail stores. Also, buckwheat is making a reappearance in the cereal section of grocery stores.

All of which may mean little or nothing to U.S. farmers who—discouraged over the relatively low returns for buckwheat vis-a-vis other grain crops—may choose to let the buckwheat boom pass them by.

Buckwheat is a definite problem crop for those who seek to up its yields. Naturally cross pollinated and impossible to inbreed because of self incompatibility, it is not well adapted for improvement through plant breeding.

Also, buckwheat hasn't responded well to high fertilizer applications and other cultural practices which made for dramatic yield gains for other crops.

Thus, while yields of corn, wheat, and oats—buckwheat's three big competitors—have gone up 100, 80, and 70 percent, respectively, in the last 20 years, average buckwheat yields have been stuck between 17 and 20 bushels an acre. At recent price levels just about any of the competing crops would give farmers substantially higher returns.

Traditionally about half the U.S. buckwheat crop was fed to livestock on the farms where grown. Over the years, though, this practice has fallen into disfavor as the relatively high fiber content and low total digestible protein make buckwheat inferior to other feeds. It now appears that as much as 90 percent of the crop may move off the farm—with food uses the big outlet.

SRS discontinued its regular data series on buckwheat in 1964. The most recent data on acreage, yield, and production are based on the 1969 census of agriculture.

During that year New York, the longtime leader, still ranked as the Nation's top buckwheat State with production of 216,000 bushels.



## SPOTLIGHT ON IOWA

"Stand almost anywhere in Iowa. You're on a farm," declares Roger H. Sutherland, statistician in charge of SRS's Crop and Livestock Reporting Service at Des Moines.

"Our State's around 140,000 farms cover 94 percent of the total land area for a total of 34.4 million acres of farmland. Moreover," continues Sutherland, "from over one-half to three-fifths of the whole State of Iowa has been harvested cropland in recent years."

Iowa's good land holds the key to the Hawkeye State's agricultural success. Prime farmland, Classes I and II, covers 54 percent of the State. Another 28 percent is also very good land, Class III.

Iowans reap four crops from almost all their cropland—corn, oats, hay, and soybeans. In fact, these four accounted for 21.6 out of the 21.9 million acres harvested in 1971.

"The 1971 Iowa corn harvest totaled over a fifth of the Nation's crop," notes Sutherland. "Production, averaging 102 bushels per acre from 11.6 million acres, hit a record 1.18 billion bushels.

Last year Iowans harvested over 10 million acres of corn with a record yield per acre. The 1972 crop is similar in size to the record 1.18 billion bushels produced the previous year.

"If last year's crop had been loaded on railroad cars," calculates Sutherland, "the train would have stretched 6,400 miles—two and one-

half times the distance from New York to San Francisco."

Iowans, however, have the habit of keeping their corn to feed their own animals. For example, they kept half the huge 1971 crop, selling 590 million bushels for around \$614 million. The sale made up 14 percent of cash receipts from farming.

Iowa also led the Nation in another kind of corn, popcorn. The State generally accounts for around a quarter of the popcorn. In 1971, the 139-million-pound crop was worth almost \$3.4 million.

"Besides holding on to their feed corn, Iowans also keep most of their oats," says Sutherland. In 1971 Iowa farmers harvested over 91 million bushels of oats, worth over \$59 million. However, they kept 70 percent of them, selling the rest for almost \$18 million. The 1972 crop promises to run close to 77 million bushels.

Iowa farmers also retain almost all of their hay. From the 1971 crop of close to 7 million tons, worth over \$142 million, they sold 555,000 tons for over \$11 million. The 1972 crop will probably total close to 7½ million tons.

Of Iowa's four big crops, the only one grown almost completely for sale is soybeans. Iowa now produces around 15 percent of the Nation's crop.

Soybean acreage has grown from the 1950's average of 2.2 million acres, largely at the expense of oats.



*An Iowa farmer takes a cold winter walk to inspect some of his white faced steers. Family farm feedlots, such as this one, provide most of the State's fed cattle production. In fact, Iowa contains 39,000 feedlots, more than any other State in the Nation.*

For 1972 estimated acres harvested stand at over 6 million.

In 1971 the State produced 174 million bushels of soybeans. Farmers sold 171 million bushels for almost \$523 million and kept the rest for seed. Indicated production for 1972 stands well over 200 million bushels—around a sixth of forecast national production. Yields will probably reach a State and national record.

In 1971 crops brought Iowa farmers almost \$1.3 billion in cash receipts, 32 percent of the total. The rest, over \$2.7 billion, came from livestock and products. Iowa's \$4 billion in cash receipts were topped only by California's \$4.9-billion total.

"When you realize that Iowans held on to 10 percent of the Nation's corn crop and 7 percent of the oats for their own livestock in 1971, the State's leadership in fed cattle and hog production should come as no surprise," says Sutherland.

Cattle and calves led the income parade for Iowa farmers in 1971, earning over \$1.4 billion in cash receipts, 36 percent of the State total. Iowa has marketed from 4 to 4½ million grain fed cattle annually in recent years. In 1971, it led the Nation in marketings with 4.25 million head.

Forecasts for 1972, however, show that Iowa will probably come in second to Texas. Estimates for the year indicate Texas will probably

market around 4.4 million fed cattle as compared with Iowa's 3.9 million.

"But in the hog department," says Sutherland, "no one could ever foresee Iowa being in second place. Iowa has been the leader in hogs and pigs since 1889, when it had 5 million out of the Nation's 45 million head."

Today Iowa has one out of every four hogs in the Nation—or 15 million out of 63 million head according to the December 1971 inventory. Iowa hogs outnumbered those in Illinois, the Nation's No. 2 hog State, by more than two to one, and usually Iowa contains as many hogs as Illinois, Ohio, and Missouri combined.

Iowa hog farmers marketed 22.6 million head in 1971, earning \$955 million, almost a quarter of the total cash receipts for the State.

For 1972 production will be down due to producer response to low hog prices in late 1970 and 1971, but cash receipts will be up because of sharply higher hog prices due to the reduction in pork supplies and strong consumer demand.

"Last year was good for hog earnings and good for corn growers, but I think you also should mention our exports. Iowa usually ranks as the Nation's No. 2 exporter of agricultural products," concludes Sutherland.

"In fiscal 1972 Iowa exported almost \$620 million worth of agricultural products, around 7½ percent of the U.S. total."

# ag Outlook

DIGESTED FROM OUTLOOK REPORTS OF THE ECONOMIC RESEARCH SERVICE  
FORECASTS BASED ON INFORMATION AVAILABLE THROUGH DECEMBER 1, 1972

**NOT JUST BEANS . . . .** Record soybean production, of 1,351 million bushels as of November 1, and farm prices averaging around \$3.25 per bushel are expected to raise the value of the 1972 crop to \$4.4 billion, an all-time high that's a fourth above the 1971 crop value.

**SOYBEAN DEMAND** is proving strong again in 1972/73. A record crop plus a 72-million-bushel carryover provides a supply of 1,423 million bushels, 12 percent above 1971/72. However, come September 1, stocks will once again be near last year's record low carryover.

**CRUSHINGS** for 1972/73 will probably reach a new high of around 765 million bushels, compared with last season's 721 million and the 1969/70 present record 760 million bushels. The soybean industry's processing capacity stands at an estimated 925 million bushels this year, compared with around 900 million last season.

**GOLDEN GLOBETROTTER . . .** Exports of soybeans are forecast to exceed 500 million bushels (13.6 million metric tons) this year and to stand somewhere in the neighborhood of 100 million bushels above 1971/72's total, 416 million bushels. About 40 million bushels of the prospective increase in overseas sales will be to the USSR.

**WHEAT TURNABOUT . . .** While the Nation's supplies of wheat for 1972/73 are estimated at 2,425 million bushels, 2% above last season's level, the carryover at the beginning of the 1973/74 year will probably measure only around 483 million bushels, the lowest since 1967. Exports will swallow 1,150 million bushels of U.S. wheat this marketing year topping by a third the old export record set in 1965/66.

**DOMESTIC WHEAT USE** for 1972/73, in contrast to exports, is forecast down 9% from last year's 874 million bushels as farmers reduce feeding. The fall in feed use reflects high wheat prices relative to feed grains. Although wheat feeding was relatively heavy through September, during October-June it is expected to drop sharply, while domestic food use is expected to continue near 1971/72's 526 million bushels.

**FEED GRAIN** supplies are now forecast at 246 million tons, up 3% from last year's total. Domestic use and exports together will probably exceed 200 million tons, up 6% from last year.

**FEED GRAIN PRICES** now run well ahead of a year ago. In early December for example, No. 2 yellow corn at Chicago was quoted at \$1.55 per bushel, 38¢ more than a year earlier and No. 2 milo at Kansas City was \$2.76 per hundredweight, 78¢<sup>1</sup> above a year ago. Exports are now more or less the determining price factor. Further sales from abroad could raise prices more, while weakness in export demand could result in declines.

**EXPORTS** for 1972/73 have been buoyed by large sales to USSR, continued strong demand from Japan and Europe, emergence of China as a buyer, and sharply reduced supplies for export outside the United States. Exports are slated to total 32 million tons, substantially more than last year's 27 million, the second highest movement abroad. In 1965/66 exports peaked at 29 million tons.

**CORN USE**, projected at 5.4 billion bushels for 1972/73, should leave a carryover of perhaps 1 billion bushels next October 1. Due to a rise in feeding, our own consumption will probably run 5% above the 1971/72 total of 4.3 billion bushels. Usual gains for recent years have averaged around 2½%. Exports are expected to run 200 million bushels ahead of the 796 million bushels shipped abroad last year.

**BROILERS** . . . Broiler meat production during 1973's first half should gain somewhat on the 4.1 billion pounds produced a year earlier, despite higher production costs particularly for feed. Prices during 1972's second half, up around 7% from a year earlier at the wholesale level, encouraged chick placements. Broiler prices in coming months likely will run above year-earlier levels, provided production increases are kept at moderate levels. Broiler prices in the first half of 1973 will be supported by relatively light but increasing pork supplies, relatively high red meat prices, and rising consumer incomes.

# Statistical Barometer

Item	1970	1971	1972—latest available data
<b>Prices:</b>			
All prices received by farmers (1967=100)	110	112	130 November
Crops (1967=100)	100	107	120 November
Livestock (1967=100)	118	116	138 November
All prices paid by farmers (1967=100)	114	120	130 November
Ratio <sup>1</sup> (1967=100)	96	94	100 November
Consumer price index, all items (1967=100)	116	121	127 October
Food (1967=100)	115	118	125 October
<b>Farm Income:</b>			
Volume of farm marketings (1967=100)	108	111	98 Jan.-Sept.
Cash receipts from farm marketings (\$bil.)	50.5	53.1	38.5 Jan.-Sept.
Crops (\$bil.)	20.9	22.6	13.6 Jan.-Sept.
Livestock (\$bil.)	29.6	30.5	24.9 Jan.-Sept.
Realized gross farm income (\$bil.)	57.9	60.1	66.1 <sup>(3)</sup>
Production expenses (\$bil.)	41.1	44.0	47.3 <sup>(3)</sup>
Realized net farm income (\$bil.)	16.8	16.1	18.8 <sup>(3)</sup>
<b>Income and Spending:</b>			
Disposable personal income, total (\$bil.)	689.5	744.4	798.7 <sup>(3)</sup>
Expenditures for food (\$bil.)	114.2	117.3	125.2 <sup>(3)</sup>
Share of income spent for food (percent)	16.6	15.8	15.7 <sup>(3)</sup>
<b>Farm Food Market Basket:<sup>2</sup></b>			
Retail cost (\$)	1,223	1,244	1,320 September
Farm value (\$)	476	477	539 September
Farmers' share of retail cost (percent)	39	38	41 September
<b>Farm Production and Efficiency:</b>			
Farm output, total (1967=100)	102	111	113 November
Livestock (1967=100)	105	108	109 November
Crops (1967=100)	100	112	114 November
<b>Balance Sheet of the Farming Sector:</b>			
Assets, total (\$bil.)	305.8	314.9	339.2 <sup>(4)</sup>
Real estate (\$bil.)	207.1	213.0	228.6 <sup>(4)</sup>
Non-real estate (\$bil.)	75.9	78.3	85.8 <sup>(4)</sup>
Livestock and poultry (\$bil.)	23.5	23.7	27.3 <sup>(4)</sup>
Machinery and motor vehicles (\$bil.)	31.8	33.8	36.4 <sup>(4)</sup>
Crop inventories	10.9	10.7	11.8 <sup>(4)</sup>
Household equipment and furnishings (\$bil.)	9.7	10.1	10.3 <sup>(4)</sup>
Financial assets (\$bil.)	15.6	16.0	16.8 <sup>(4)</sup>
Investments in cooperatives (\$bil.)	7.2	7.6	8.0 <sup>(4)</sup>
Debt, total (\$bil.)	58.1	61.1	66.9 <sup>(4)</sup>
Real estate (\$bil.)	28.4	29.5	31.3 <sup>(4)</sup>
Non-real estate (\$bil.)	29.7	31.6	35.6 <sup>(4)</sup>
Proprietors' equities	247.7	253.8	272.3 <sup>(4)</sup>
Debt to asset ratio (percent)	19.0	19.4	19.7 <sup>(4)</sup>

<sup>1</sup>Ratio of index of prices received by farmers to index of prices paid, interest, taxes, and farm wage rates.

<sup>2</sup>Average quantities per family and single person households bought by wage and clerical workers, 1960-61, based on Bureau of Labor Statistics figures.

<sup>3</sup>Annual rate, seasonally adjusted third quarter.

<sup>4</sup>As of January 1, 1972.

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